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- October 16. White-throated Sparrow, Ruby-crowned Kinglet.
17. Cowbird, Myrtle Warbler.
18. Bewick's Wren.
20. Vesper Sparrow.
21. Swamp Sparrow.
24. Pipit.
26. Wilson's Snipe.
28. Rusty Blackbird.
31. Slate-colored Junco.
- November 2. Purple Grackle.
4. Purple Finch.
10. Mallard.
15. Fox Sparrow.
21. Pine Siskin.
23. Short-eared Owl.
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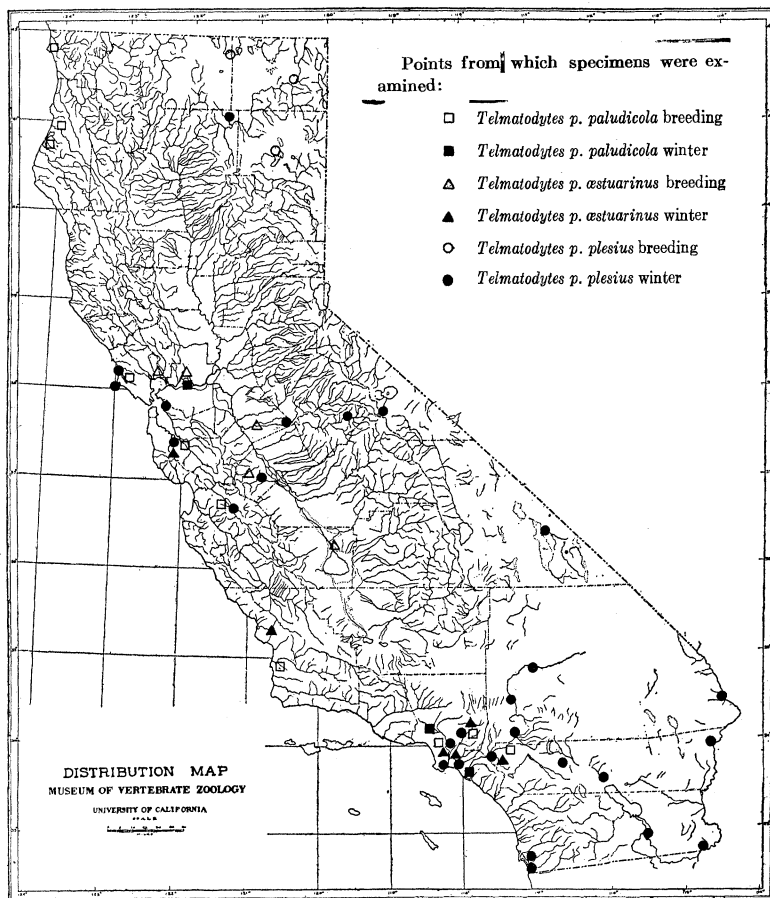
A REVISION OF THE MARSH WRENS OF CALIFORNIA.¹

BY HARRY S. SWARTH.

AN extensive series of marsh wrens from the delta region east of San Francisco Bay has been accumulated in the California Museum of Vertebrate Zoölogy, chiefly through the personal efforts of Misses Annie M. Alexander and Louise Kellogg. The appearance of these birds contrasts so strongly with specimens available from other parts of California that it has seemed desirable to make a careful study of their systematic status. With this object in view, as many specimens as possible have been assembled illustrative of the Long-billed Marsh Wren (*Telmatodytes palustris*) upon the Pacific Coast, especially in California. Although each of the several collections examined or appealed to contained but a meager representation of the species, still, by assembling material

¹ Contribution from the University of California Museum of Vertebrate Zoölogy.

from many sources, and for the use of which specific acknowledgment is made beyond, a total of 239 skins became available. This series, while still leaving gaps to be filled before any precise plotting of breeding ranges can be made, is more than any previous student



Distribution in California of the subspecies of *Telmatodytes palustris*.

of the subject has had at his disposal, and is sufficient to indicate that there are three, instead of two, distinguishable subspecies in California. It also suffices to indicate with a fair degree of accuracy

the summer and winter distribution of these three races within the State.

The greater part of the series under consideration is from the Museum of Vertebrate Zoölogy, including, besides the State collection, the Grinnell, Morcom, and Swarth collections. This, however, although by far the most extensive series available from any one source, still left much to be desired in the way of adequate material from certain regions. The loan of specimens from other collections has filled these gaps to some extent. The collections in the Los Angeles County Museum of History, Science and Art, were at the writer's disposal, including the Daggett, Richardson, Willett, Lamb and Law collections, which are housed there. To the United States National Museum, through Dr. C. W. Richmond, Assistant Curator of Birds, the writer is indebted for the loan of certain specimens, particularly the type of Baird's "*Cistothorus palustris*, var. *paludicola*." Other institutions which generously responded to requests for the loan of material were the Biological Survey of the United States Department of Agriculture, the University of Oregon, and the Oregon State Fish and Game Commission. Messrs. Joseph and John W. Mailliard, A. B. Howell and L. E. Wyman also kindly permitted the use of the specimens contained in their several collections. To each of these institutions and individuals the writer wishes to express his sense of obligation, and his appreciation of the aid afforded.

***Telmatodytes palustris æstuarinus*, new subspecies.**

Type.—No. 25349, Museum of Vertebrate Zoölogy; adult male; Grizzly Island, Solano County, California; April 17, 1915; collected by J. Grinnell; original number, 3152.

Subspecific characters.—In coloration *æstuarinus* is darker than the average of *paludicola*, especially as compared with southern Californian examples of the latter. Occasional specimens of *paludicola*, however, from all parts of its range, are quite as dark colored. In dimensions, *T. p. æstuarinus* differs from *T. p. paludicola* in its greater size throughout, being of about the same dimensions as *T. p. plesius*. From *plesius* it differs in its much darker coloration.

Specimens examined from the following localities.—California. Solano County: Cordelia Slough, 7; Grizzly Island, 3; Suisun, 18. Sonoma County: Second Napa Slough, 3. Santa Clara County: Palo Alto, 1.

Los Angeles County: El Monte, 1; San Gabriel River, 1; Los Angeles, 4; Bixby, 1. Riverside County: Corona 1. San Luis Obispo County: San Luis Obispo, 1. Merced County: Los Baños, 15. Kings County: Tulare Lake, 1.

Oregon: Netarts, 1; Elmira, 1; Eugene, 1.

Total, 60.

Remarks.—The characteristics of the bird and mammal fauna of the San Francisco Bay region have been set forth by Grinnell (Univ. Calif. Publ. Zoöl., vol. 10, 1913, pp. 191–194) in a concise summary of conditions at that point, so that there is no need here of dwelling further upon the topic. In the paper cited the possibility is pointed out of the marsh wren of this region proving to be different from the recognized Pacific Coast races, a statement that is borne out by the present study.

The naming of this form of *Telmatodytes palustris* adds another to the five distinctive species of vertebrates already known from the Suisun region, giving added emphasis to the strongly marked faunal peculiarities of the section. The characteristics of the marsh wren are again exactly such as occur in the song sparrow, meadow mouse, and shrew of the same locality and association, namely, an extreme of dark coloration and maximum of size as compared with those forms most nearly related and geographically closely adjacent. The wren is not so closely circumscribed in its habitat as are the song sparrow, meadow mouse, and shrew, its breeding range including at least a part of the San Joaquin Valley. This is shown by fifteen specimens at hand taken at Los Baños, Merced County, in June, four of which are adults and eleven juvenals. The four adults are in excessively worn plumage, but though color characteristics are obscured thereby, measurements of these birds accord so closely with those of Suisun specimens as to leave no doubt as to the subspecific identity of the two series. The young birds also are appreciably larger than full-feathered juvenals of *paludicola* from Humboldt Bay. Three non-breeding birds from Modesto, Stanislaus County, while not extreme examples of *æstuarinus*, are apparently to be referred to this form rather than *paludicola*. A juvenal from Tulare Lake is not with certainty identifiable, but I have tentatively referred it to *æstuarinus*, regarding it as probable that this form inhabits the entire San Joaquin Valley.

Whether the breeding ground also extends northward in the Sacramento Valley, remains to be demonstrated. Three winter birds at hand from the coast of Oregon, apparently referable to *æstuarinus*, point to the possibility of a breeding ground farther north and nearer the point of capture than is the Suisun region. Of these three specimens just one is fairly typical of *æstuarinus* in appearance, the others tending toward *paludicola*. Possibly all three are merely variants of the latter race, showing individual variation towards *æstuarinus*.

There are also at hand, as listed above, a few individuals apparently of this race, from Palo Alto, San Luis Obispo, and various points in the San Diegan region, taken from October to December. This is indicative of a slight migratory movement, or rather a scattering of individuals slightly beyond the breeding confines. Certain of the specimens from the San Diegan region are not absolutely typical, and may be representative of the form as it occurs in the southern San Joaquin Valley.

Conditions on the Pacific Coast are such as to render it not so much a matter of surprise that three races of marsh wren should now be recognized from California, as that the species should not be found to have split up into a greater number of forms. Suitable breeding grounds for birds of this nature are limited in area and isolated at widely separated points. The Pacific Coast marsh wrens, with the exception of *plesius*, are not markedly migratory in habit, and it would seem fair to suppose that these several factors would produce more conspicuous results in differentiation of races than has actually taken place. On the Atlantic Coast of the United States less apparent differences of environment, in a region otherwise not noticeably productive of geographical variants, are accompanied by strikingly differentiated local races of the same species.

***Telmatodytes palustris paludicola* (Baird).**

Type locality.— Shoalwater Bay, Washington.

Range in California.— Resident locally in marshy tracts. In northern California, the region west of the coast ranges; south of San Francisco Bay, along the coast, in the Santa Cruz and San Diegan regions, probably to the Mexican boundary line. There are no specimens of this subspecies at hand

from the Colorado or Mohave desert regions which would serve to indicate seasonal migrations to these points.

Specimens examined from the following localities.—California. Los Angeles County: Los Angeles, 5; Nigger Slough, 3; Torrance, 1; Garnsey, 1; El Monte, 9; Long Beach, 2; Bixby, 3. Orange County: Sunset Beach, 1. Riverside County: Riverside, 2. Santa Barbara County: Guadalupe Lake, 1. San Benito County: Paicines, 3. Stanislaus County: Modesto, 3. Alameda County: San Lorenzo, 2; Berkeley, 1. Santa Clara County: Palo Alto, 15. San Mateo County: San Mateo, 1. Marin County: Head of Limantour Bay, 2; Point Reyes, 2; Bolinas, 1. Sonoma County: Santa Rosa, 1. Solano County: Suisun Marsh, 1; Grizzly Island, 2; Cordelia Slough, 1. Humboldt County: Humboldt Bay, 1; Eureka, 3; Arcata, 1. Del Norte County: Crescent City, 3.

Oregon: Netarts, 2.

Washington: Shoalwater Bay, 1. Seattle, 2. South Tacoma, 1.

Total, 77.

Remarks.— But a cursory examination of the material assembled for the present study was necessary to demonstrate that there were three types represented therein, separable with a fair degree of ease and certainty. The specimens of *plesius* disposed of, there remained the two dark colored coastal races, with the attendant problem as to which of them should bear the name *paludicola*. By the courtesy of the United States National Museum, through Dr. C. W. Richmond, I was enabled to examine Baird's type of *Cistothorus palustris*, var. *paludicola*, indispensable for a proper understanding of the question. There are also at hand, received from the collection of the above mentioned institution and from those of the Oregon State University and the Oregon State Fish and Game Commission, some additional skins from the coast of Oregon and Washington, in the same general region as the type locality of *paludicola*.

While there is no doubt as to the distinctness of the two dark-colored coastal races here recognized, for the differences are trenchant enough to be appreciable at a glance, the nature of the type of *paludicola* makes it difficult to decide as to which of the two is the unnamed form. The type specimen of *paludicola* is a non-sexed bird taken October 31, a date that renders it possible at least that it was a winter visitant at the point of capture (Shoalwater Bay, southern Washington), and not representative of the breeding bird of that region. In size it is somewhat larger than the average

of the subspecies as here recognized, and tends accordingly towards *æstuarinus* in appearance. Judging from the appearance of this specimen, the suggestion arose of the probable division of the Pacific Coast marsh wren into two races, northern and southern; one of the two, a larger form, *paludicola*, in the north, south to San Francisco Bay and the Suisun region; the other, a smaller, unnamed race, along the southern coast district. This was the writer's first idea of the state of affairs; but breeding birds which became available from scattered points along the entire coast from Washington to southern California, demonstrated the essential unity of the series, though with an appreciable diminution in size southward. (Most breeding birds from the San Diego region are decidedly smaller than any from other points.)

Telmatodytes palustris plesius (Oberholser).

Type locality.—Fort Wingate, New Mexico.

Range in California.—Breeds in the northeastern corner of the State (the Modoc or Great Basin faunal area). There are breeding birds at hand from the following localities: Pit River near Alturas, Tule (= Rhett) Lake, and Eagle Lake. One from Fort Crook may or may not be a breeding bird. There are no data to indicate whether or not any individuals of this race remain through the winter on the breeding grounds. The subspecies is abundant in winter in suitable spots on the Colorado and Mohave deserts; it also occurs in large numbers in the San Diegan region, and in much lesser numbers in the San Joaquin Valley and northward along the coast as far as Marin County.

Specimens examined from the following localities.—California: Imperial County: Fort Yuma, 5; Brawley, 1. San Diego County: Tia Juana River, 1; San Diego, 1. Riverside County: Mecca, 7; Palm Springs, 2; Riverside Mountain, 1; Lower Chemehuevis Valley, 1; Corona, 2. San Bernardino County: Yermo, 3; Victorville, 4; San Bernardino, 1. Los Angeles County: Long Beach, 4; Bixby, 4; San Pedro, 1; Alamitos, 1; El Monte, 2; Los Angeles, 7; Pasadena, 2; Nigger Slough, 1. Inyo County: Death Valley, 1. Mono County: Gem Lake, 1. Mariposa County: Yosemite Valley, 1. Stanislaus County: La Grange, 1. San Benito County: Paicines, 1. Santa Clara County: Palo Alto, 2. Merced County: Los Banos, 1. Alameda County: Berkeley, 1. Marin County: Point Reyes, 1; Tomales Point, 1. Lassen County: Eagle Lake, 1. Shasta County: Fort Crook, 1. Siskiyou or Modoc County: Tule (= Rhett) Lake, 2. Modoc County: Alturas, 2.

Oregon: Burns, 1; Camp Harney, 1; Fort Klamath, 2; Corvallis, 1.

Nevada: Lovelock, 1; Quinn River Crossing, 1.

Idaho: Nampa, 6.

British Columbia; Cariboo Road, 1.

Total, 82.

Remarks.—The known breeding range of the western marsh wren in California is very limited, being merely the restricted northeastern corner of the State, a region which shows strongly Great Basin faunal affinities. In winter, however, *plesius* is perhaps the most abundant of any form of the species, occurring in numbers over a large part of the state. It is an especially numerous winter visitant in the San Diegan district of southern California. In this region summer is the dry season, a period of such excessive aridity that birds with the needs and proclivities of the marsh wrens are closely limited as to habitat, being restricted to extremely circumscribed areas about the few suitable permanent streams and sloughs. In winter this is all changed. Abundant rains often transform what were dry fields and pastures into ponds and marshes, while every roadside ditch is running full, and bordered with dense vegetation. In consequence, the visiting marsh wrens are enabled to scatter widely over the country. It may be that the resident birds even at this time adhere somewhat closely to their restricted summer habitat, but, however that may be, it is the writer's experience that in southern California indiscriminate winter collecting of marsh wrens in the places where they are most easily obtained, will produce several examples of *plesius* to one of the resident *paludicola*.

Going northward in California there is a great and abrupt lessening of numbers of the subspecies *plesius* as the San Diegan region is left behind. There are a few specimens at hand from various scattered points: One from Los Baños, in the central San Joaquin Valley; one from Paicines and two from Palo Alto, from the coast region south of San Francisco Bay; one from Berkeley; two from Point Reyes and Tomales Point, Marin County. It is worth noting that there is not a single example of this subspecies in the extensive series of marsh wrens collected in the Suisun region. These facts are clearly illustrative of the winter range of *plesius* in California, with its metropolis in the southern end of the state (both on the deserts and in the San Diegan region) and with

scattering individuals occurring northward in the San Joaquin Valley and along the coast at least as far as Marin County. The presence in the series from Oregon, however, of a typical example of *plesius* (a winter bird) from Corvallis, in the northern coast region of this state (University of Oregon Mus. No. 1081) shows that individuals of this form may occasionally be found in winter at any point along the coast.

The subspecies is generally regarded as a winter visitant, only, on the Colorado Desert (see Grinnell, Univ. Calif. Publ. Zool., vol. 12, 1914, p. 211), as in the San Diegan region, but there is one specimen in the Morcom collection collected at Fort Yuma on May 7, a date which suggests the possibility, at least, of its being a breeding bird. The extensive series from southern California contains few specimens which are helpful in determining average dates of arrival and departure, most of them having been taken from November to February. The earliest date represented is for a specimen from San Pedro, October 3, but it seems probable that the species arrives in southern California some weeks earlier. The latest date from southern California, aside from the Fort Yuma example above mentioned, is from Mecca, about the center of the Colorado Desert, April 17.

The series of *plesius* here assembled exhibits a rather wide range of variation, both as to color and size, so much so as to suggest the possibility of more than one recognizable form being included under this name. This suspicion is emphasized by the appearance of six fall birds from Nampa, Idaho, which are of an extreme grayness of coloration not to be matched by any winter birds from California. The status of these several series, however, is a problem to be solved by some future worker with an abundance of breeding birds from appropriate localities. In series of winter specimens of this or comparable species there are sure to be many intermediates, sometimes extremely difficult to recognize as such, and always hard to adjudge as to their real significance. So it must suffice to say here that, compared with the Idaho specimens (which may be presumed to be fairly typical of *plesius*), winter birds from California are, with hardly an exception, more richly colored, less grayish, and with appreciably darker flanks. This generally darker coloration is by no means correlated with small

size, so is not to be looked upon as indicative of mere intergradation with the smaller and darker race *paludicola*. There are, however, a number of small sized individuals in the series, which, despite this character, are readily distinguishable from the latter race. These are nearly all from the Colorado and Mohave deserts.

In Oberholser's description (Auk, Vol. 14, 1897, pp. 186-196) of *Cistothorus palustris plesius* mention is made (p. 192) of an August specimen from Fort Klamath, Oregon, which though referred to *plesius*, is regarded as intermediate between that race and *paludicola*. This skin is before me, and the characteristics mentioned are readily appreciable. There is another specimen at hand, a January bird, from Camp Harney, in the same general region, which is even darker in appearance, though again apparently referable to *plesius*. The Fort Klamath bird can be closely matched as to color by others from southern California, which I also regard as non-typical examples of *plesius*.

The question arises as to the relationships of the breeding bird of south-central Oregon to *æstuarinus* of the Suisun region, a question that cannot be settled without material from the Sacramento Valley. This region is not represented by a single specimen in the series under consideration. It is at any rate a possibility that *æstuarinus* extends north through the Sacramento Valley to southern Oregon, its range interposed between those of *plesius* and *paludicola*, and that at the north mergence of characters occurs with either one or both of the latter races. The few birds at hand from southern Oregon, and from certain other points (as noted under *æstuarinus*) are certainly suggestive of such a possibility.

MEASUREMENTS IN MILLIMETERS (AVERAGE, MINIMUM AND MAXIMUM) OF PACIFIC COAST RACES OF *Telmatoodytes palustris*.

	Wing	Tail	Culmen	Tarsus	Middle Toe without Claw
<i>Telmatoodytes p. paludicola</i> 8 males, San Diegoan district, Calif.	48.2 (44.0-49.5)	43.2 (41.0-44.5)	12.5 (11.5-13.0)	18.7 (17.0-19.0)	12.2 (11.0-13.0)
8 females, San Diegoan district, Calif.	47.1 (45.0-49.5)	41.0 (39.5-43.0)	11.9 (11.5-12.5)	17.7 (17.0-18.0)	11.8 (11.5-12.0)
3 males, Santa Clara and Marin counties, Calif.	47.5 (47.2-48.0)	43.5 (41.0-45.5)	12.1 (11.5-12.8)	17.4 (17.0-18.0)	12.7 (12.2-13.0)
10 females, Santa Clara and Marin counties, Calif.	47.3 (45.5-48.0)	42.4 (41.0-44.0)	11.8 (11.0-12.5)	18.0 (17.5-19.0)	12.1 (12.0-12.5)
6 (4 males, 2 sex undetermined), Marin County, Humboldt Bay and Crescent City, Calif.; Shoal- water Bay and Tacoma, Wash- ington.	48.1 (46.0-49.5*)	43.1 (40.0-45.0*)	11.9 (11.5-12.8)	18.0 (17.0-19.2*)	12.4 (11.0-13.0*)
<i>Telmatoodytes p. astuarinus</i> 10 males, Solano and Sonoma counties, Calif.	51.6 (50.5-53.0)	46.8 (45.5-49.0)	13.0 (12.2-13.5)	17.8 (17.0-20.0)	13.04 (12.0-13.5)
2 females, Solano and Sonoma coun- ties, Calif.	52.0 (51.0-53.0)	48.5 (48.0-49.0)	12.7 (12.5-13.0)	19.0	12.7 (12.5-13.0)
<i>Telmatoodytes p. plesius</i> 10 males, Colorado and Mohave deserts, Calif.	53.6 (52.0-55.5)	47.2 (45.0-49.0)	13.4 (13.0-14.5)	19.7 (19.0-20.5)	12.9 (12.0-13.5)
8 females, Colorado Desert and San Diegoan district, Calif.	51.5 (49.0-55.5)	45.5 (41.5-50.0)	12.9 (12.5-13.5)	18.9 (17.2-20.5)	11.9 (11.0-13.0)

* Measurements of type specimen of *Cisnothorus palustris paludicola* Baird.